

## Using Geographic Information System (GIS) Applications in Pesticide Risk Assessments

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Pesticide risk assessments for drinking water and ecological impacts need to provide both temporal (duration and frequency of exposure) and spatial (How much of the use area is impacted? To what extent?) contexts to the risk posed by pesticide use in the environment. Much of the information that goes into the pesticide risk assessment—where the pesticide is used and how much is used, locations of water bodies and ecological habitats, relative vulnerabilities of the water bodies and habitats to pesticide impacts—lends itself to a spatial analysis and evaluation. The Office of Pesticide Programs (OPP) has developed Geographic Information System (GIS) tools to further the science in our risk assessments for ecological impacts and drinking water exposure. This poster describes three recent efforts in which OPP applied GIS tools to improve its risk assessments:

1. OPP is working with partners and collaborators—Office of Water, U.S. Geological Survey, and Oak Ridge National Laboratories—to delineate watersheds for most of the surface drinking-water intakes classified as community water systems. Identification of these watersheds will facilitate OPP's ability to evaluate the vulnerability of drinking water sources to pesticide contamination based on watershed specific land use, pesticide use, and soil and hydrologic factors.
2. GIS was used in the organophosphate (OP) cumulative drinking water exposure assessment. Maps of OP usage were overlaid with surface drinking-water intakes and runoff vulnerability coverages to identify potential geographic areas of concern. OPP is now applying these methods in some individual pesticide risk assessments.
3. GIS tools are being used to refine the fate and exposure models used in ecological assessments by identifying more regionally specific variables used in the models and risk assessments.

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